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Proteases from Gram-Positive Organisms David A. Estell SN# Unassigned Docket No. GC381-US-D2 Sheet 1 of 11

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FIG.\_1A

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610 590 ttatatgattatgaccgaaaagatgcagaaggcaagctgcgcgagctt LYDYDRKDAEGKLR 650 630 catctgaaaaagagcattgaagtgatagaggtcccgtctattccagaa HLKKSIEVIEVPSI 710 690 cggcatacagttcaccatgaacaaattgaggatttgcttacaacgaca TVHHEQ I EDLL 750 730 ttgattgaatgcgcttacttttcggtggggaaatggaacttatcagga LIECAYFSVGKWNL 790 810 70 tcagcaagcttaaagcagcaaaaaccattccttcttatcagtgtgatt PFLLISVI SLKQQK 850 830 gaaggggagggccgtatgatctctggtgagtatgtctatcctttcaaa EGEGRMISGEYVYPFK 890 910 870 aaaggagatcatatgttgctgccttacggtcttggagaatttaaactc K G D H M L L P Y G L G E F K L 930 gaaggatatgcagaatgtatcgtctcccatctg EGYAECIVS

FIG.\_1B

GNLNEYSE	::	SMYKGFTL	09	240 GPYAAKTD	:   : GELG-KTE	110	280 290 4√ -GGIFVGPCGNKVDHA	· · ·	L9S	170		РЕВНТУНН	230
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160 SCWAFSAVVT	: : : : : : : : : : : : : : : : : : : :	ECWAFAAHQN	Ĭ 40	220 IYRNTYPYEGA	: :: : : : : : : : : : : : : : : : : :	100	SKDFQLYR	<u>-</u>	SWDELLRRVK	150	330 IGNSYGVCGL	GKLRELHLKK	210
150 TPVKNQGSGG	-	GYTIPSQRTG	30	210 LQLVAQYGIH	: 	06	260 -SIANQPVSVVLEAAGKDFQLYR-		SELTTMIERG	140	320 SNGYIRIKRG	LYDYDRKDAE	200
140 YVDWRQKGAV		IWGGTALADF	20	200 NGGYPWSA	:  : LEGORFPLLI	80	1	:: 	IYGHNATTKE		¢¢ 310 IKNSWGTGWGI	roonsdtyr!	190
130 VLNDGDVNIPE		PLFFKPVFKERIWGGTALADFGYTIPSQRTGECWAFAAHQNGQSVVQNGMYKGFTL	10	190 200 210 220 240 _carpa.p lldcdrrsygcnggypwsalqlvaqygihyrntypyegvqrycrsrekgpyaaktd	:  : :   :   :    :    :    :    :	70	250 RQVQPYNEGALLY-	••	YIIDCQKDAEIIYGHNATTKEELTTMIERGEWDELLRRVKVKPGDFFYVPSGT	120 1	300 AVGYGPNYILI	:      AIGKGILALE1	180
130 140 150 160 170 150 170 170 170 170 170 170 170 170 170 17	ЭÖ	: I YJDE	S 된	papa_carpa.p	GV YJDE	N)O	papa_carpa.p	<b>4</b>	 YJDE	H)	φφ 310 320 330 340 papa_carpa.p AVGYGPNYILIKNSWGTGWGENGYIRIKRGTGNSYGVCGLYTSSFYPVKN	YJDE	<b>)</b>

51G.2

## 4/11

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20	(IWGGTALAD-		KIWGGTALRDF	20	α	.EGDREPLLT		VEGDRFPLLT	80	140	ATTKEELTTM	= : : : : : : : : : : : : : : : : : : :	ARSKTELVTM	140	
10	↑ MTTEPLFFKPVFKERIWGGTALAD-FGYTIPSQRTGECWAFAAHQNGQSVVQNGMYKG		MTQSPIFLTPVFKEKIWGGTALRDRFGYSIPSESTGECWAISAHPKGPSTVANGPYKG	10	C C	O T SET WEHHRHI, FGOI, EGDRFPLLTKILDADQDLSVQVHPNDEYANIHENGELGKTECW		IELWEEHREVFGGVEGDRFPLLTKLLDVKEDTSIKVHPDDYYAGENEEGELGKTECW	7.0	130	VV IDCOKDAEIIYGHNATTKEELTTMIERGEWDELLRRVKVKPGDFFYVPSGTVHAIGKG		DCKENAEIIYGHTARSKTELVTMINSGDWEGLLRRIKIKPGDFYYVPSGTLHALCKG	130	
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	59 yjde.pep	FT	IW:	KT	09	19	y Jue. pep YI		YI	07	79 yjde.pep	IL	PMI	AL	

## 5/11

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230	$\begin{array}{c} \downarrow \downarrow \\ ALETQQNSDTTYRLYDYDRKDAEGKLRELHLKKSIEVIEVPSIPERHTVHHEQIEDLL \end{array}$	:        :   :          : :  :  :  : :  : :	230	290	TLIECAYFSVGKWNLSGSASLKQQKPFLLISVIEGEGRMISGEYVYPFKKGDHMLLPY		TFVQGEYFSVYKWDINGEAEMAQDESFLICSVIEGSGLLKYEDKTCPLKKGDHFILPA	290			
220	EVIEVPSIP	::    : NAATVPHVD	220	280	SEGRMISGEY		SSGLLKYEDK	280		· · · · · · · · · · · · · · · · · · ·	
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FIG. 30

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6/11

	AYKG	_	PLAG		<b>н</b>	TECW	= -	TECW		<b>⊢</b>	IGKG	=	ALCKG		
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40	EPLFFKPVFKERIWGGTALAD-FGYTIPSQRTGECWAFFAAHQNGQSVVQNGMYKG		THPLFLEPVFKERLWGGTKLRDAFGYAIPSQKTGECWAVSAHAHGSSSVKNGPLAG $_{\Delta}$	40	100	ELWEHHRHLFGQLEGDRFPLLTKILDADQDLSVQVHPNDEYANIHENGELGKTECW		LDQVWKDHPEIFGFPDGKVFPLLVKLLDANMDLSVQVHPDDDYAKLHENGDLGKTECW	100	160	COKDAEIIYGHNATTKEELTTMIERGEWDELLRRVKVKPGDFFYVPSGTVHAIGKG		I DCKDDAELILGHHASTKEEFKQRIESGDWNGLLRRIKIKPGDFFYVPSGTLHALCKG $^{\Delta\Delta}$	160	
30	-FGYTIPSQR'	=======================================	AFGYAIPSQK	30	06	KILDADQDLS		'KLLDANMDLS	06	150	11ERGEWDELI	= ::	RIESGDWNGLI	150	
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10	PLFEKPVFKE		PLFLEPVFKE	10	70	WEHHRHLFGQ	= :: - ::	WKDHPEIFGF	. 70	130	KDAEIIYGHN	<u>:</u> _ :	DDAELILGHE	130	
	MTTE	=	MTHI		09	LSEL	:: -	LDQV	09	120	IDCQ	=	IDCK	120	
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c	180	190	200	210	220	230	2
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II	180	ff 190	200	210	220	230	
	240	250	260	270	280	290	2
99 yjde.pep	TLIEC	TLIECAYFSVGKWNLSGSASLKQQKPFLLISVIEGEGRMISGEYVYPFKKGDHMLLPY	SASLKOOKPI	FLLISVIEGE	SRMISGEYVY	РЕККБОНМСС	λ
GL.	•••	:: :     ::     ::	•••	- - - - -	- :: -:		
: YDHS	VYVQS	VYVQSDYFSVYKWKISGRAAFPSYQTYLLGSVLSGSGRIINNGIQYECNAGSHFILPA	RAAFPSYQT	YLLGSVLSGS	sriinngiqy	ECNAGSHFIL	¥.
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yjde.pep	300 GEFK]	310 GEFKLEGYAECIVSHL		. ?			
YDHS	GEFT	:     ::   GEFTIEGTCEFMISHP 300 310					

FIG. 4B

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FIG.\_5A

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610 590 gtatacgattatgaccgctgtaatgaccagggccaaaaaagaactctt V Y D Y D R C N D Q G Q K R T L 650 630 catatagaaaaagccatggaagtcataacgataccgcatatcgataaa I E K A M E V I T I P H I D K 710 690 gtgcatacaccggaagtaaaagaagttggtaacgctgagatcattgtt V H T P E V K E V G N A E I 750 tatgtgcaatcagattatttctcagtgtacaaatggaagattagcggc YVQSDYFSVYKWK 810 790 70 cgagetgettttcettcatatcaaacctatttgetggggagtgttetg RAAFPSYQTYLLGSVL 850 830 agcggatcaggacgaatcataaataatggtattcagtatgaatgcaat S G S G R I I N N G I Q Y E C N 910 890 870 gcaggctcacactttattctgcctgcgcattttggagaatttacaata AGSHFILPAHFGE FTI 930 gaaggaacatgtgaattcatgatatctcatcct MISHP EGTCE F

FIG.\_5B

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FIG.\_6A

Proteases from Gram-Positive Organisms David A. Estell SN# Unassigned Docket No. GC381-US-D2 Sheet 11 of 11

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610 590 cgggtgtacgattatgaccgtcttgatagcaacggaagtccgagagag RVYDRLDSNGSPR 670 650 630 cttcattttgccaaagcggtcaatgccgccacggttccccatgtggac AVNAATVPHVD H F A K 710 690 gggtatatagatgaatcgacagaatcaagaaaaggaataaccattaaa Y I D E S T E S R K G I 750 730 acatttgtccaaggggaatatttttcggtttataaatgggacatcaat W s v Y K T F V Q G E Y F 810 790 70 ggcgaagctgaaatggctcaggatgaatcctttctgatttgcagcgtg FLICSV S M A Q D E GEAE 850 830 atagaaggaagcggtttgctcaagtatgaggacaaaacatgtccgctc D K T C P L I E G S G L L K Y E 910 890 870 aaaaaaggtgatcactttattttgccggctcaaatgcccgattttacg K G D H F I L P A Q M P D F T 930 ataaaaggaacttgtacccttatcgtgtctcatatt KGTCTLIVSH

FIG.\_6B